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A synopsis of *Mythimna* (*Sablia*) *griseofasciata* (Moore) (Lepidoptera, Noctuidae, Hadeninae) and a close relative with a new replacement name

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Abstract *Leucania irrorata* Moore, 1888 is considered to be a good species distinct from *Mythimna griseofasciata* (Moore, 1881). As the former becomes a junior secondary homonym of *Mythimna irrorata* (Moore, 1881) (=*Axylia irrorata* Moore, 1881), a new replacement name, *Mythimna decipiens*, is proposed for it. The male and female genitalia of these two species are illustrated and described.

Key words *Mythimna griseofasciata*, *Mythimna decipiens* nom. nov., Lepidoptera, Noctuidae.

Introduction

Leucania griseofasciata Moore, 1881 had been treated as a junior synonym of *Leucania nainica* Moore, 1881 until Hreblay & Ronkay (1998) recognized the former as a good species. Although the abdomens of both syntypes of *Mythimna nainica* are missing, it was proposed by Hreblay & Ronkay (1998) that the use of the name *Mythimna nainica* should be assigned to a close sympatric species of *Mythimna lineatipes*. Yoshimatsu (2002) followed this treatment and revised *Mythimna lineatipes* and its close relatives from Asia with keys to species of *M. lineatipes* (Moore), *M. nainica* (Moore), *M. percisa* (Moore) and *M. lucida* Yoshimatsu & Hreblay, on the basis of male and female genitalia.

One more related taxon, *Leucania irrorata* Moore, 1888, had been considered to be a junior synonym of *Leucania nainica* Moore, 1881 by Hampson (1905) and Poole (1989). On the other hand, Hreblay & Ronkay (1998) treated *Leucania irrorata* Moore, 1888 as a junior synonym of *Leucania griseofasciata* Moore, 1881 with lectotype designations of both species.

However, detailed examination of both types has revealed that *L. griseofasciata* Moore, 1881 and *L. irrorata* Moore, 1888 are distinct species. The lectotype of the former is a female and that of the latter is a male, and Hreblay & Ronkay (1998) had mistaken the combinations of their sexes. As the latter becomes a junior secondary homonym of *Mythimna irrorata* (Moore, 1881) (=*Axylia irrorata* Moore, 1881), *Mythimna decipiens* nom. nov. is proposed as a replacement name for it and their male and female genitalia are described.

Materials and methods

The posterior portion of the zone in the male phallus (=suprazonal sheath) is usually exposed outside the body and is partially inserted in the female body during copulation (Shirôzu, 1960). Therefore, the diameter of the suprazonal sheath of the phallus in the male (DSS: Fig. 1) and the minimum width of the antrum in the female (MWA: Fig. 2) were measured for the purpose of recognizing the right combination of sexes in the two species treated below. The suprazonal sheath and antrum are sclerotized in both. The genitalia

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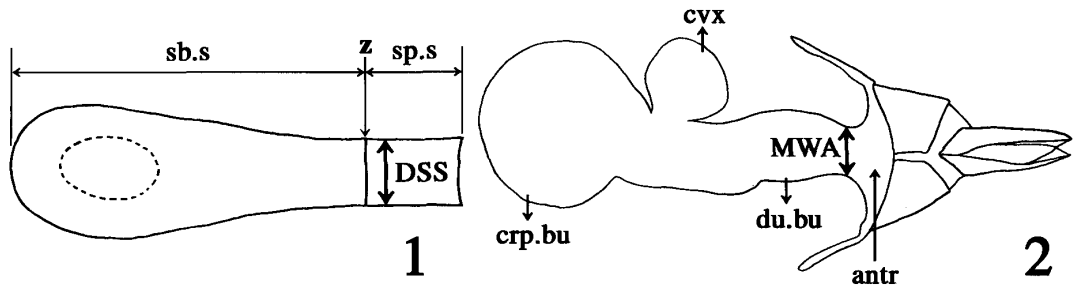

Figs 1–2. Male genitalia in part and female whole genitalia of *Mythimna*, diagrammatic. 1. Phallus in ventral view. 2. Female genitalia in ventral view. sb.s: subzonal sheath; sp.s: suprazonal sheath; z: zone; DSS: diameter of subzonal sheath for Fig. 1; antr: antrum; crp.bu: corpus bursae; cvx: cervix bursae; du.bu: ductus bursae; MWA: minimum width of antrum for Fig. 2.

measured were not mounted on glass slides but settled in a laboratory dish with 70% alcohol and a piece of gauze. In all cases the genitalia were measured from the ventral side, and the results are shown in the remarks on *Mythimna griseofasciata*.

Specimens utilized were borrowed from NSMT, Tokyo and the private collection of Mr H. Yoshimoto, Tokyo; the collection of NIAES, Tsukuba was also utilized. The lectotypes of *Leucania irrorata* Moore, 1888 and *Mythimna griseofasciata* (Moore, 1881) deposited in NHM, London were examined.

Acronyms used are:

NHM, London: The Natural History Museum, London, U. K.
NIAES, Tsukuba: Insect Systematics Laboratory, Natural Resources Inventory Center, National Institute for Agro-Environmental Sciences, Tsukuba, Japan
NSMT, Tokyo: National Science Museum, Tokyo, Japan

Descriptions

Mythimna (*Sablia*) *griseofasciata* (Moore) (Figs 3–5, 9, 10)

Leucania griseofasciata Moore, 1881, *Proc. zool. Soc. Lond.* **1881**: 339.
Mythimna sp.: Hacker, 1993, *Esperiana* **3**: 81: fig. f.
Mythimna (*Sablia*) *griseofasciata*: Hreblay & Ronkay, 1998, *Tinea* **15** (Suppl. 1): 165–166 (in part).

Length of forewing. Male, 13.4–14.9 mm, av. 14.1 mm; female, 13.9–15.4 mm, av. 14.5 mm.

Male genitalia. Tegumen slightly slender in lateral view; vinculum moderately broad in lateral view; saccus moderately large. Uncus slightly short and falcate with hairs on distal half. Valva except cucullus produced ventrally and posteriorly; costa raised at posterior portion; editum moderately large with many hairs; ampulla short and tapering; sacculus very broad, with a long waved prolongation projecting from the dorsoposterior portion of the sacculus and reaching almost to the posterior margin of the valvula; harpe long with two large rounded processes dorsally; valvula broad and long, with broad membranous area, a few spines along ventral margin; cucullus moderately large and rounded with many coronal spines on outer area, a few spines marginally and its basal arm short and strongly curved ventrally. Juxta as in Fig. 9C. Phallus unmodified; vesica moderately long, about 1.3 times as long as aedeagus when everted, with bulging distal half, bearing dense spinules on entire surface of distal half, an almost single row of spines on distal half and a long stout

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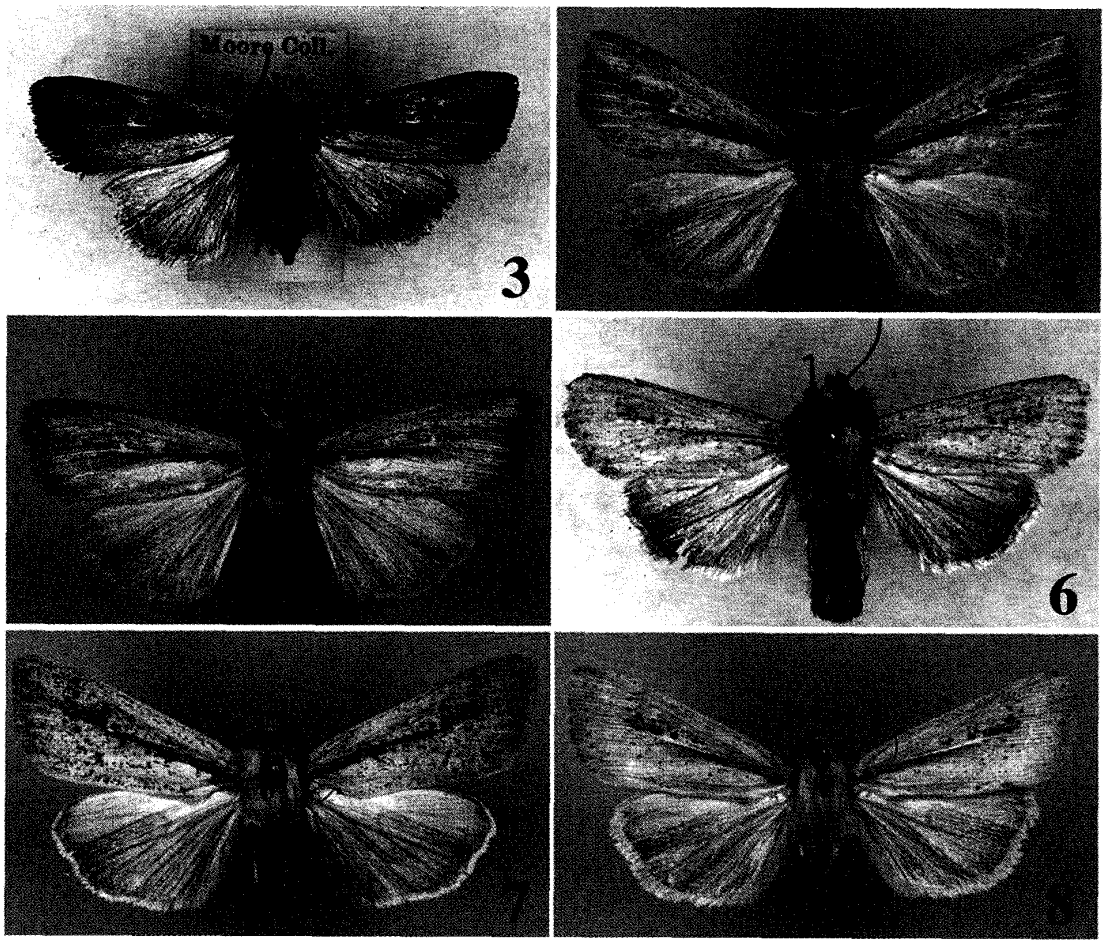

Figs 3–8. Adults of *Mythimna* spp. 3. *M.* (*Sablia*) *griseofasciata* (Moore), lectotype, ♀, India. 4. *Ditto*, ♂, Nepal. 5. *Ditto*, ♀, Nepal. 6. *M.* (*Sablia*) *decipiens* Yoshimatsu, nom. nov., (lectotype of *Leucania irrorata* Moore, 1888), ♂, India. 7. *Ditto*, ♂, Nepal. 8. *Ditto*, ♀, Nepal.

spine at distal end.

Female genitalia. Seventh abdominal tergum unmodified, seventh abdominal sternum with a pair of humps laterally. Eighth abdominal tergum unmodified; apophysis anterioris moderately long. Ductus bursae sclerotized and abruptly curved at the middle; ostium bursae moderately broad. Ductus seminalis attached to the anterior portion of cervix bursae. Corpus bursae membranous and rounded; cervix bursae broad and membranous with sclerotized central portion. Papilla analis unmodified; apophysis posterioris moderately long.

Distribution. India and Nepal.

Specimens examined. [India] ♀, lectotype of *Leucania griseofasciata* Moore, 1881, Dalhousia, Genitalia Slide BM Noct. No. 15026 (=Hreblay 5270) (coll. BMNH). [Nepal] 23 ♂ 5 ♀, W. Nepal, Karnali, Jumla Dist., Jumla 2,440 m, 19–20. ix. 1981, M. Owada; 4 ♂ 6 ♀, W. Nepal, Jumla Dist., Ghughuti 2,660 m, 21. ix. 1981, M. Owada; 2 ♀, W. Nepal, Jumla Dist., Jhari 2,550 m, 24. ix. 1981, M. Owada; 7 ♀, W. Nepal, Jumla Dist., Jillya 2,690 m, 29. ix. 1981, M. Owada (coll. NSMT).

Remarks. DSS of this species is 0.46–0.49 mm (average 0.47 mm; *N*=5) and that of the

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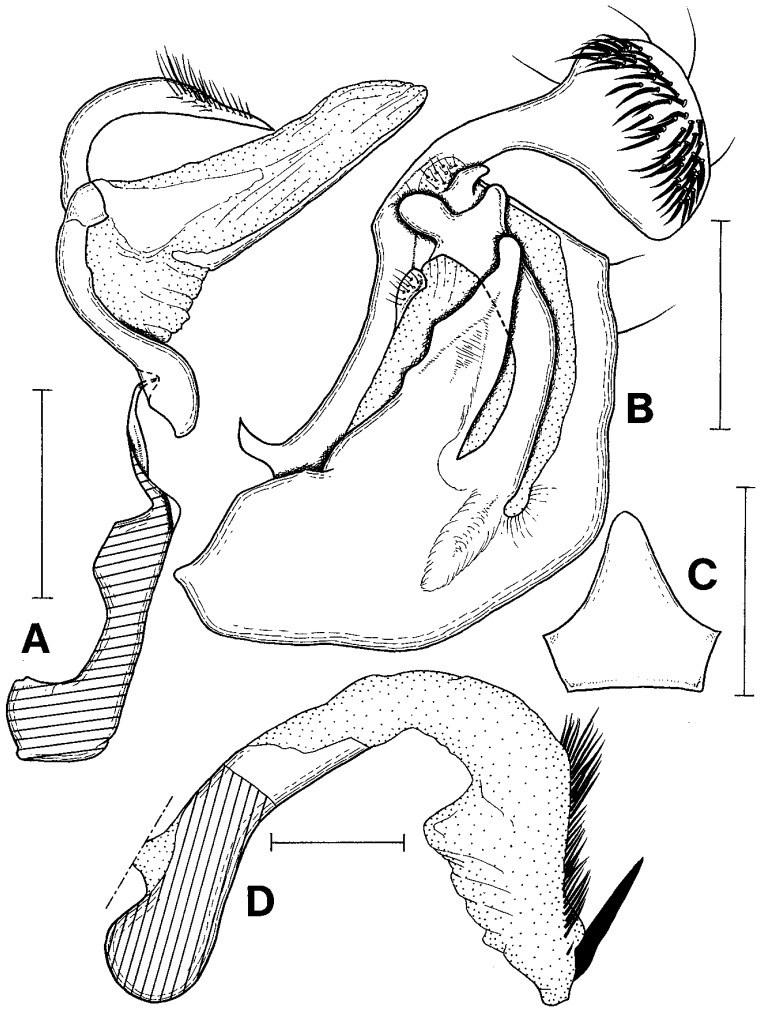

Fig. 9. Male genitalia of *Mythimna* (*Sablia*) *griseofasciata* (Moore). A. Ring in lateral view. B. Right valva in inner view. C. Juxta. D. Phallus in lateral view. Scales 1 mm.

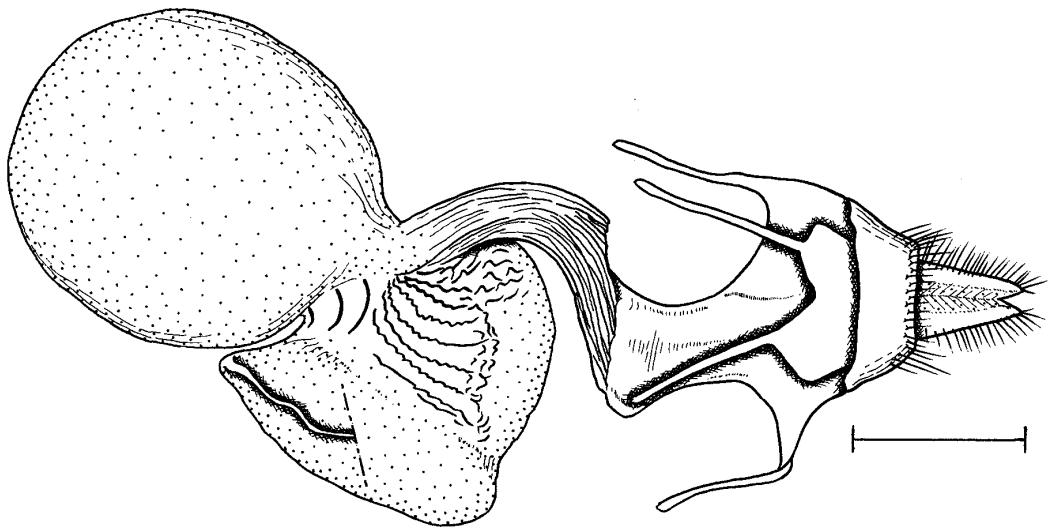

Fig. 10. Female genitalia of *Mythimna* (*Sablia*) *griseofasciata* (Moore) in dorsal view. Scale 1 mm.

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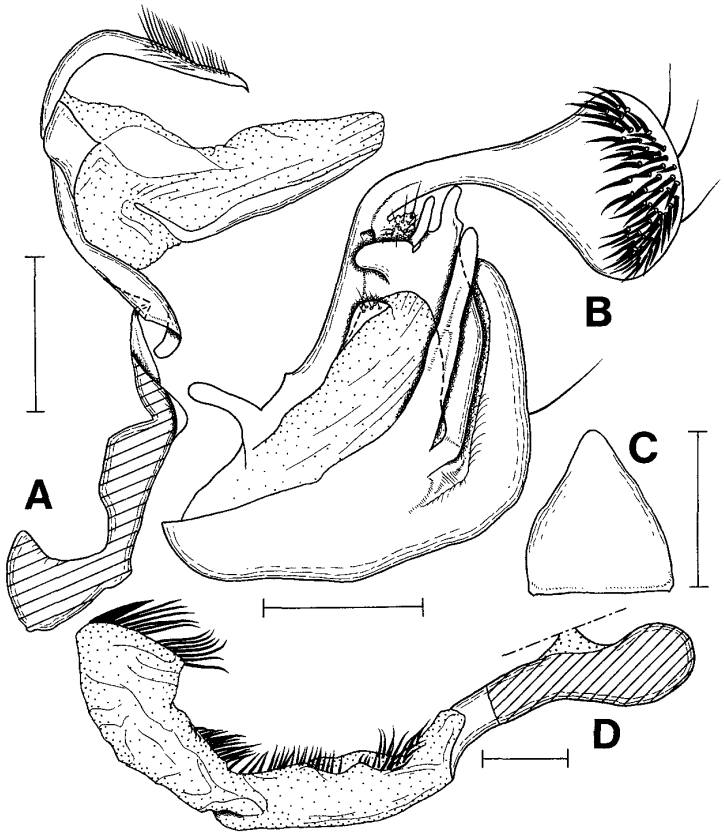

Fig. 11. Male genitalia of *Mythimna* (*Sablia*) *decipiens* Yoshimatsu, nom. nov. A. Ring in lateral view. B. Right valva in inner view. C. Juxta. D. Phallus in lateral view. Scales 1 mm.

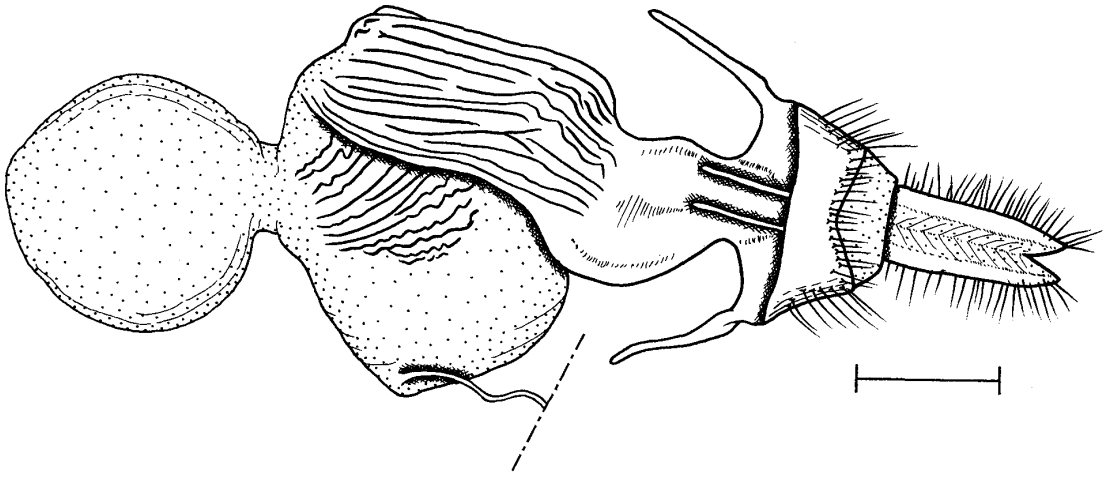

Fig. 12. Female genitalia of *Mythimna* (*Sablia*) *decipiens* Yoshimatsu, nom. nov. in dorsal view. Scale 1 mm.

following species is 0.59–0.66 mm (av. 0.61 mm; *N*=5). MWA of this species is 0.40–0.48 mm (av. 0.42 mm; *N*=5) and that of the following species is 0.59–0.63 mm (av. 0.61 mm; *N*=5). Judging from the differences of size, copulation between the male of the following species and the female of this species seems to be almost impossible. Furthermore, both the lengths of vesica and ductus bursae in this species are shorter than those in the

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following species.

Besides the differences seen in DSS, MWA and the lengths of vesica and ductus bursae, the distinguishing characters in *M. griseofasciata* and *M. decipiens* are presented as follows. In general the forewing of the former is less dotted, while that of the latter is heavily irrorated with fuscous especially in the male, and the length of the forewing in the former is shorter than that in the latter. In the male genitalia, the long prolongation of the dorsoposterior portion of the sacculus is broad and wavy in *M. griseofasciata*, but it is narrower and club-shaped in *M. decipiens*; the shape of the juxta and the vesica is also different. In the female genitalia, the ductus seminalis arises from the anterior portion of the cervix bursae in *M. griseofasciata*, but from the left lateral portion of the cervix bursae in *M. decipiens* and the ductus bursae of the former is narrower than that of the latter.

Mythimna* (*Sablia*) *decipiens Yoshimatsu, **nom. nov.** (Figs 6–8, 11, 12)

Leucania irrorata Moore, 1888, *Proc. zool. Soc. Lond.* **1888**: 409, **sp. rev.**; a junior secondary homonym of *Mythimna irrorata* (Moore, 1881) (=*Axylia irrorata* Moore, 1881).
Mythimna sp.: Hacker, 1993, *Esperiana* **3**: 81: fig. e.
Aletia nainica: Yoshimoto, 1993, *Tinea* **13** (Suppl. 3): 130, pl. 62, fig. 5.
Mythimna (*Sablia*) *griseofasciata*: Hreblay & Ronkay, 1998, *Tinea* **15** (Suppl. 1): 165–166 (in part), pl. 147: 28.

Length of forewing. Male, 15.0–17.2 mm, av. 16.3 mm; female, 15.3–15.8 mm, av. 15.5 mm.

Male genitalia. Tegumen slender and narrow in lateral view; vinculum moderately broad in lateral view; saccus moderately large. Uncus slightly short and falcate with hairs on distal half. Valva except cucullus with rounded margin; costa curved dorsally on distal portion; editum moderately large with many hairs; ampulla short and slender; sacculus moderately broad, with a long club-shaped prolongation projecting from the dorsoposterior portion of the sacculus and reaching the posterior margin of the valvula; harpe long with a large rounded process dorsoanteriorly and a small slender process dorsoposteriorly; valvula moderately broad and long, with a moderately broad membranous area, a few spines along ventral margin; cucullus moderately large and rounded with many coronal spines on outer area, a few spines marginally and its basal arm short and strongly curved ventrally. Juxta as in Fig. 11C. Phallus unmodified; vesica moderately long, about 1.7 times as long as aedeagus when everted, bearing dense spinules on entire surface of distal half, a single row of shorter spines on basal 2/3, a single row of longer spines near distal end and a stout spine at distal end.

Female genitalia. Seventh abdominal tergum with a pair of strongly excavated postero-lateral portions, seventh abdominal sternum with a pair of concavities near mesal portion. Eighth abdominal tergum unmodified; apophysis anterioris moderately long. Ductus bursae sclerotized and strongly curved at the middle; ostium bursae broad. Ductus seminalis attached to the left lateral portion of cervix bursae. Corpus bursae membranous and rounded; cervix bursae broad and membranous with sclerotized central portion. Papilla analis unmodified; apophysis posterioris moderately long.

Distribution. India and Nepal.

Specimens examined. [India] ♂, lectotype of *Leucania irrorata* Moore, 1888, Dharmsala, Genitalia Slide BM Noct. No. 15033 (=Hreblay 5277) (coll. BMNH). [Nepal] 1 ♂, W. Nepal, Karnali, Jumla Dist., Jumla 2,440 m, 19–20. ix. 1981, M. Owada; 1 ♀, W. Nepal, Jumla Dist., Jhari 2,550 m, 24. ix. 1981, M. Owada; 3 ♀, W. Nepal, Mugu Dist., Rara Lake,

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2,990 m, 25–26. ix. 1981, M. Owada; 1 ♀, W. Nepal, Karnali, Jumla Dist. Jillya 2,690 m, 29. ix. 1981, M. Owada (coll. NSMT); 1 ♂, C. Nepal, Damang 2,300 m, 1. iv. 1988 (coll. NIAES); 1 ♂, Kathmandu, Mt Phulchouki 2,275 m, 11. v. 1991, Genitalia Slide No. HY-1755; 1 ♂, same locality, 22. iii. 1992, S. Bahadur; 1 ♂, same locality, 29. iii. 1992, S. Bahadur; 1 ♂, same locality, 25. iv. 1992, S. Bahadur; 1 ♂, Kathmandu, Mt Phulchouki 2,075 m, 20. iii. 1992, K. Tamang; 1 ♂, same locality, 21. iii. 1992, K. Tamang (coll. Yoshimoto).

Remarks. Specimens recorded as *Aletia nainica* sensu Yoshimoto (1993) were examined and all these specimens proved to represent *M. decipiens*.

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摘　　要

1新置換名を含む *Mythimna* (*Sablia*) *griseofasciata* (Moore) とその近縁種の分類学的再検討 (鱗翅目, ヤガ科, ヨトウガ亜科) (吉松慎一)

ヤガ科ヨトウガ亜科のキヨトウ類は成虫の斑紋が単純で種数も多く, また過去の属の扱いも不統一であったこと等から, 種レベルでの処置にシノニムやホモニムが複雑に絡んでいることも度々見受けられる. 今回もそのよい例であるが, さらに雌雄の誤同定までも起こったケースである.

Hreblay & Ronkay (1998) は *Leucania irrorata* Moore, 1888 を *Mythimna* (*Sablia*) *griseofasciata* (Moore, 1881) の新参シノニムと扱ったが, これは間違いで前者は確かな種である. 彼らはレクトタイプとして前者についてはインド産♂をそして後者についてはインド産♀を指定したが, 両種の雌雄の組み合わせを間違ってしまった. そこで両種の雌雄交尾器の一部を計測し, 両種の雌雄の対応を明瞭にし, また識別点をはっきりさせた. 雄交尾器の phallus の zone より後半部 (=suprazonal sheath) は体外に露出され, 交尾の際には部分的に♀の体内に挿入される (白水, 1960). 故に, 雄交尾器の phallus の suprazonal sheath の直径 (Fig. 1: DSS) と雌交尾器の antrum の最小幅 (Fig. 2: MWA) を腹方より測定し,

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両種の識別を試みた. もちろん, suprazonal sheath も antrum も十分硬化している. なお, 雌雄交尾器ともプレパラート標本として押しつぶされたものではなく, 乾燥標本を解剖後70%アルコールが入ったシャーレの中で立体的な構造を保った状態のものを計測した. 前者のDSSは0.59–0.66 mm (平均0.61 mm; *N*=5), MWAは0.59–0.63 mm (平均0.61 mm; *N*=5) となりよく対応している. また, 後者のDSSは0.46–0.49 mm (平均0.47 mm; *N*=5), MWAは0.40–0.48 mm (平均0.42 mm; *N*=5) とほぼ類似な数値である. これらの交尾器の計測値を見ると, 前者の♂と後者の♀は交尾困難なように思われる (前者♂のsuprazonal sheathの直径に比べて後者♀のantrumは幅が小さすぎるため). このような長さの対応以外に, ♂のvesicaと♀のductus bursaeは前者では両方とも長く, 後者では両方とも短く, 同種内で長さがよく対応していることもまた両種の雌雄の対応が正しいことを支持している.

一方, 前者 (*Leucania irrorata* Moore, 1888) は*Mythimna*属の一員であり, そうするとコガタキヨトウ*Mythimna irrorata* (Moore, 1881) (=*Axylia irrorata* Moore, 1881) の2次新参ホモニムとなるので, ここで新置換名*Mythimna* (*Sablia*) *decipiens* Yoshimatsu, nom. nov. を与えた. *M. griseofasciata*と*M. decipiens*は, インドとネパールに同所的に分布しており, 今回用いた材料に限っても同地点で同時に採集されている.

上記の交尾器の雌雄における長さの対応以外に, 両種の形態的差異は以下の通りである.

1. *M. griseofasciata*の♂前翅長は13.4–14.9 mm (平均14.1 mm), ♀では13.9–15.4 mm (平均14.5 mm). 一方, *M. decipiens*の♂前翅長は15.0–17.2 mm (平均16.3 mm), ♀では15.3–15.8 mm (平均15.5 mm) とより大きい.

2. *M. decipiens*は前翅に黒色の斑点を備える (特に♂は多数備える) が*M. griseofasciata*にはほとんどない.

3. 雄交尾器のsacculus背方に*M. griseofasciata*では波打った広く長い突起を備えるが, *M. decipiens*では細長い棍棒状の突起を備える. また, juxtaやvesicaの形態にも差が見られる.

4. 雌交尾器については, *M. griseofasciata*ではductus bursaeは幅が狭くまたductus seminalisがcervix bursaeの前方に付着するが, *M. decipiens*ではductus bursaeは幅広でまたductus seminalisがcervix bursaeの左側方に付着する.

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